

# Current Projects - Lakes, Ponds and Reservoirs

For more information this project please contact:

Randall Schultz  
Chariton Research Station  
24570 U.S. Hwy. 34  
Chariton, IA 50049  
(641) 774-2958  
[Randy.Schultz@dnr.iowa.gov](mailto:Randy.Schultz@dnr.iowa.gov)



## Rathbun Lake Habitat and Zebra Mussel Assessment

During 2009 zebra mussel (*Dreissena polymorpha*) veligers were first detected in Lake Rathbun. Although research has been conducted on the effect of zebra mussels on Great Lakes food webs, little attention has been given to the possible effects of this invasive species on reservoir systems, due, in part, to the lack of larval fish, plankton, and water quality data prior to zebra mussel establishment in such systems. Fortunately, a 15-year data set of such information exists for Lake Rathbun prior to zebra mussel contamination. The objectives of this study are to determine current density and species composition of ichthyoplankton in Rathbun Lake to document potential changes in ichthyoplankton following zebra mussels establishment in the Rathbun Lake.

The primary food source for both zooplankton and the invasive, filter feeding zebra mussel is phytoplankton. With their ability to attain high densities, zebra mussels may exert a bottom-up influence on aquatic food webs, affecting zooplankton and both planktivorous and larval piscivorous fish that are dependent upon zooplankton as a food source. Food deprivation in the larval fish stage may lead to reduced recruitment, stunted growth, and a decrease in overwinter survival. Zooplanktivorous fish such as age-0 gizzard shad *Dorosoma cepedianum* often form the basis of piscivorous fish diets, and are key components of white crappie *Pomoxis annularis*, and walleye *Sander vitreus* diets. These are important sport fish species for Rathbun Lake. Additionally, Rathbun Lake is one of two major walleye brood stock lakes for the state of Iowa. Any detrimental effects to walleye recruitment and growth in Rathbun Lake will affect brood fish collections, and, hence, the walleye stocking program for the state. Decline in abundance of zooplanktivorous fish species because of zebra mussel presence may result in negative effects for piscivorous top predators. This project is also examining the effects of shoreline stabilization (i.e., riprapping) on larval fish density and growth.

In our on-lake sites, larval tows collected primarily gizzard shad (84%), but other species included *Pomoxis* (6%), *Lepomis* (4%), and freshwater drum (3%). Shoreline trawling was comprised primarily of bluegill (80%), but also bluntnose minnow *Pimephales notatus* (13%) and *Pomoxis* spp. (5%). Mean bluegill length in riprapped areas was significantly greater than unstabilized areas (34.1 mm versus 25.7 mm, respectively). Crappie and largemouth bass were only collected in the riprapped areas. This is considered to be a long term study, with fish abundance and size eventually correlated with reservoir hydrology, zooplankton abundance, and, potentially, zebra mussel establishment.